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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ulrich Bonne

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EXAMINER

MUI, CHRISTINE T

ART UNIT

PAPER NUMBER

1797

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/749,863	Applicant(s) BONNE ET AL.	
	Examiner CHRISTINE T. MUI	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 30-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20, 24-29 and 40-42 is/are rejected.
- 7) ☒ Claim(s) 21-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12 October 2004; 29 September 2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-29 and 40-42, drawn to a sensor system, classified in class 422, subclass 82.11.
- II. Claims 30-39, drawn to a method for detecting the characteristics of a fluid, classified in class 436, subclass 171.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process (MPEP § 806.05(e)). In this case, the method can be practiced by a materially different apparatus. Specifically, the method can be successfully conducted without the use of a waveguide.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;

- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention.**

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP

§ 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

During a telephone conversation with John Shudy, Jr., a provisional election was made with preservation of traverse to prosecute the invention of Group I, claims 1-29 and 40-42. Affirmation of this election must be made by applicant in replying to this Office action. Claims 30-39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

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F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 3-4, 7-9, 15 and 17-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 13, 17-18, 23-25, 29 and 32 of copending Application No. 10/915,577. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application is obvious in view of 10/915,577 since they both are drawn to a sensor system with first and second electrodes with a gap between them and a light waveguide which can be anticipated by the other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

3. Claim 1 is objected to because of the following informalities: In claim 1, the last line ends in 'and' and there is a period missing at the end of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. It is unclear to the examiner what is meant by a 'spark-plug-like' housing or package. The shape that is described is indefinite and does not positively claim what the shape of the housing or package of the system looks like. Does the housing of the system need to be in the shape of a spark plug or not, if so what does a 'spark-plug-like' housing or package look like.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 5, 17-20, 25-27, 29, 40 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by USP 5,085,499 to Griffin et al (herein referred "Griffin").

9. Regarding claims 1, 3 and 17-18, the reference Griffin discloses a method of in situ monitoring of a body of a fluid stored in a tank or groundwater for the presence of a selected chemical species using a probe insertable into the well or tank via a cable and

having electrical apparatus for exciting the selected chemical species in the body of the fluid. The probe can have a pair of electrodes for initiating a spark or a plasma cell for maintaining plasma to excite the selected chemical species. The spark probe shown in Figure 7, includes a pair of thoriated tungsten electrodes that are connected to conductors and positioned into the extending end of the cavity of the probe where it is adjacent to the analyte cavity where the presence of an analyte is tested. The electrodes define a spark gap axially aligned with the fiber optic cable. The probe body includes a central aperture sized for an optical fiber that extends about two-thirds the length of the probe body. The terminal portion of the optical fibers shown in the end of the central aperture is able to communicate with the analyte cavity that is covered by a screen or permeable membrane for admitting analyte fluid into the cavity. The fiber optic cable that runs two-thirds of the probe body is terminated at the entrance slit of a spectrometer that is centered at 5000 Angstroms. The spectrometer receives light transmitted through the cable at the entrance slit and emits at the exit slit only light having a selected wavelength (see column 12, lines 20-27, column 13, lines 26-63; Figure 7).

10. Regarding claim 2, the reference Griffin discloses a spark probe that includes a probe body formed of a rigid, non-conductive material that is generally cylindrical that encompasses the electrodes within the body (see column 13, lines 26-40).

11. Regarding 5, the reference Griffin discloses the thoriated tungsten electrodes with a spark gap disposed between the two of them is on the upper third of the probe

body that is near the screen or permeable membrane that is proximate to the probe body that encloses the electrodes.

12. Regarding claims 19-20, the reference Griffin discloses a spark probe with a pair of electrodes spaced apart (2mm) defining spark gap between the electrodes for generating a spark(see column 3, lines 60-63, column 13, lines 55-57). It is interpreted by the examiner that the gap that generates a spark with excitation is a discharge gap.

13. Regarding claims 25 and 27, the reference Griffin discloses a method of in situ monitoring of a body of a fluid stored in a tank or groundwater for the presence of a selected chemical species using a probe insertable into the well or tank via a cable and having electrical apparatus for exciting the selected chemical species in the body of the fluid. The probe can have a pair of electrodes for initiating a spark or a plasma cell for maintaining plasma to excite the selected chemical species. The spark probe shown in Figure 7, includes a pair of thoriated tungsten electrodes that are connected to conductors and positioned into the extending end of the cavity of the probe where it is adjacent to the analyte cavity where the presence of an analyte is tested. The electrodes define a spark gap axially aligned with the fiber optic cable. The fiber optic cable which runs two-thirds of the probe body is terminated at the entrance slit of a spectrometer that is centered at 5000 Angstroms. The spectrometer receives light transmitted through the cable at the entrance slit and emits at the exit slit only light having a selected wavelength (see column 12, lines 20-27, column 13, lines 26-63; Figure 7). It is interpreted by the examiner the spark generated between the two electrodes is an electrical discharge.

14. Regarding claim 26, the reference Griffin discloses a spark excitation probe that generates a spark between the electrodes (see column 3, lines 60-63). It is interpreted by the examiner that the spark that is generated is a micro glow.

15. Regarding claim 29, the reference Griffin discloses a screen or permeable membrane that covers the cavity that the analyte is examined above the start of the fiber optic. The fiber optic that runs through the probe body is terminated at the entrance slit of a spectrometer that is centered at 5000 Angstroms that receives light through a cable connected to the fiber optic and emits at the exit slit only light having a selected wavelength. A photomultiplier apparatus is positioned adjacent the exit slit of the spectrometer so as to receive the emitted light. the photomultiplier generates an electrical signal along a path responsive to the light emitted through the exit slit. A box car average is connected to receive a detector signal and provides a data output signal that can be recorded (see column 12, lines 20-47). It is interpreted by the examiner that the boxcar average that provides a data output signal is a processor connected to the fiber optic through a series of other processing apparatuses.

16. Regarding claim 40, the reference Griffin discloses the spectrometer receives light transmitted through the cable at the entrance slit and emits at the exit slit only light having a selected wavelength. Alternatively, the spectrometer may be operated to scan over a range of wavelengths.. A photomultiplier apparatus is positioned at the exit slit of the spectrometer to receive emitted light The spectrometer includes specifications that are slit size: 200 microns, filters: WG 335, GG475 and scan rate: 1 angstrom/second (see column 12, lines 20-30, column 13, lines 21-36).

17. Regarding claim 42, the reference Griffin discloses the spectrometer is centered at 5000 Angstroms and receives light transmitted through the cable at the entrance slit and emits at the exit slit only light having a selected wavelength. Alternatively, the spectrometer may be operated to scan over a range of wavelengths. The spectrometer includes specifications that are slit size: 200 microns, filters: WG 335, GG475 and scan rate: 1 angstrom/second (see column 12, lines 20-30, column 13, lines 21-25).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

21. Claims 4, 6, 28 and 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Griffin as applied to claim 1 above.

22. Regarding claim 4, the reference Griffin discloses the claimed invention except for specifically disclosing the first electrode is susceptible to soot build up. Griffin discloses that in operation a function generator is set to provide a periodic wave form to trigger the trigger module. The trigger module generates a periodic high voltage signal over the path to a pair of spark electrodes in the spark probe. This spark results in continuous series of sparks in the spark gap at a frequency (see column 12, lines 48-54). It is interpreted by the examiner that the spark that is created, prevents build up on the electrode that the may be kept clean. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the electrode kept clean by the electrical discharge of the electrode so that after each use, the electricity may be discharged from the apparatus and the electrodes kept clean by removing any soot build up so that the electrodes may be used again for future use.

23. Regarding claim 6, the reference Griffin discloses the claimed invention except for specifically discloses the electrical discharge gap keeps an optical surface clean. Griffin discloses a spark probe that generates a spark between a pair of thoriated tungsten electrodes (see column 13, lines 26-57). Furthermore, Griffin discloses that in

operation a function generator is set to provide a periodic wave form to trigger the trigger module. The trigger module generates a periodic high voltage signal over the path to a pair of spark electrodes in the spark probe. This spark results in continuous series of sparks in the spark gap at a frequency (see column 12, lines 48-54). It is interpreted by the examiner that the spark that is created, prevents build up on the electrode that the may be keep an area clean. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the discharge gap keep an optical surface clean so that upon measuring of an analyte, there is a clean surface for measuring.

24. Regarding claim 28, the reference Griffin discloses the spectrometer is centered at 5000 Angstroms. The spectrometer receives light transmitted through a cable that entrance slit and emits at the exit slit only light having a selected wavelength. The spectrometer can be operated to scan over a range of wavelengths at as well at a predetermined scan rate (see column 12, lines 20-30). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a Fabry-Perot interference filter that transmits a narrow band of wavelength rather than a longpass filter to selectively choose a peak wavelength of interest for screening and monitoring purposes.

25. Regarding claim 41, the reference Griffin discloses the claimed invention except for specifically disclosing the sensing electrode is susceptible to soot build up. Griffin disclose a plasma excitation probe that can be used in the monitoring of a body of fluid in a tank that comprise of a capillary tube that is mounted in a housing with an inlet port

and a discharge port extending radially in the capillary tube for receiving an discharging gas. A cylindrical ground electrode is connected over the analyte receiving end and a capillary tube or critical orifice is coupled to the analyte receiving end of the tub. The ground electrode may be connected by a wire back to the power supply. A gradient index lens is connected to the end of the capillary tube opposite the intake end to focus the emitted light into the fiber optic cable (see column 11, lines 14-49; Figure 5).

26. Claim 7-16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffin as applied to claim 6 above, and further in view of USP 5,333,487 to Kimura (herein referred "Kimura").

27. Regarding claim 7, the reference Griffin discloses the claimed invention except for where the filter is a band pass filter for at least one wavelength. Kimura discloses a spark excited fluorescence sensor that is used to monitor various gas species which includes a band pass filter to select predetermined wavelengths corresponding to the gases to be detected (see abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a band pass filter to an end of the waveguide to selectively determine wavelengths that correspond to gases that are being detected.

28. Regarding claim 8, the reference Griffin discloses the claimed invention except for a light intensity indicator connected to the filter within the device. Kimura discloses the band pass filters in the spark excited fluorescence sensor transmits only fluorescent bands and for each band pass filters, an optical detector is interfaced to convert the optical signal to electrical signals where they are amplified by an amplifier and

transmitted to a signal processor where they are converted to concentrations dependent on their intensity of excitation energy (see column 3, lines 12-20). It is interpreted by the examiner that the optical detector that converts the optical signals to electrical signals that is dependent on the fluorescence intensity is a light intensity indicator that is connected to the filter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a light intensity indicator connected to the filter so that once a particular fluorescence that corresponds to a gas is filter, the intensity indicator can report the concentration of the sample in the system.

29. Regarding claim 9, the reference Griffin discloses a spark probe that includes a probe body that encompasses the thoriated tungsten electrodes connected to conductors inside of the probe body (see column 13, lines 26-57; Figure 7).

30. Regarding claim 10, the reference Griffin discloses a spark excitation probe that generates a spark between the electrodes (see column 3, lines 60-63). It is interpreted by the examiner that the spark that is generated is a micro glow.

31. Regarding claim 11, the reference Griffin disclose the spectrometer uses a WG 335 filter that is known in the art to be a long pass filter, which is an interference filter, of UV light (see column 13, lines 22-25).

32. Regarding claim 12, the reference Griffin discloses the spectrometer is centered at 5000 Angstroms. The spectrometer receives light transmitted through a cable that entrance slit and emits at the exit slit only light having a selected wavelength. The spectrometer can be operated to scan over a range of wavelengths at as well at a predetermined scan rate (see column 12, lines 20-30). It would have been obvious to

one having ordinary skill in the art at the time the invention was made to use a Fabry-Perot interference filter that transmits a narrow band of wavelength rather than a longpass filter to selectively choose a peak wavelength of interest for screening and monitoring purposes.

33. Regarding claim 13, the reference Griffin discloses a spark probe that has an analyte cavity that is covered by a screen or a permeable membrane for admitting analyte fluid into the cavity (see column 13, lines 26-57; Figure 7).

34. Regarding claim 14, the reference Griffin and Kimura disclose the claimed invention. Kimura disclosed a spark excited fluorescence sensor that enables monitoring of various gas species from a discharge from a system as exhaust from an automobile (see abstract, column 2, lines 61-66). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the sensing system in the monitoring the exhaust of a combustion system to observe and screen the components of the sample.

35. Regarding claim 15, the reference Griffin and Kimura disclose the claimed invention. Griffin discloses the spark probe includes a probe body that is generally cylindrical that includes a central aperture sized for receiving an optical fiber and an analyte cavity that is covered by a screen or a permeable membrane for admitting analyte fluid into the cavity. The probe body also encloses a pair of electrodes that are connected to conductor and the electrodes define a spark gap (see column 13, lines 26-57; Figure 7).

36. Regarding claim 16, the references Griffin and Kimura disclose the claimed invention except for where the spark plug like package is connected to an exhaust system. Kimura discloses that the spark excited fluorescence sensor is installed in an exhaust pipe of an automobile where the combustion of the exhaust is representative of the combustion products (see abstract, Figure 2, column 2, lines 61-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to connect the sensing system to an exhaust system to obtain samples of gases before decomposition, association or disproportionation of the gas species.

37. Regarding claim 24, the reference Griffin and Kimura disclose the claimed invention. Kimura disclosed a spark excited fluorescence sensor that enables monitoring of various gas species from a discharge from a system as exhaust from an automobile (see abstract, column 2, lines 61-66). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the sensing system in the monitoring the exhaust of a combustion system to observe and screen the components of the sample.

38. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffin as applied to claim 21 above, and further in view of USP 3,612,686 to Braman et al (herein referred 'Braman').

39. Regarding claims 21-23, the reference Griffin discloses the claimed invention except for a spectrometer with an optical grating. Braman discloses an apparatus for spectrochemical analysis of a gas that is mixed with a carrier gas and introduced into an analysis space between two electrodes. Upon excitation of the sample gas between the

two electrodes, they produce radiation having characteristic frequencies and wavelengths that are detected by sensing means. A variety of spectrum producing devices can be used such as prisms, grating monochromators, spectrographs or interference filters. A plane grating may be used in combination with a spectrograph/spectrometer that permits good sensitivity over a wavelength range of about 1800 to 10000 Angstroms (see abstract, column 5, lines 13-31). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an optical grading with the spectrometer to increase the sensitivity of the spectrometer for reflecting and diffracting the light.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE T. MUI whose telephone number is (571)270-3243. The examiner can normally be reached on Monday-Thursday 7-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CTM

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797